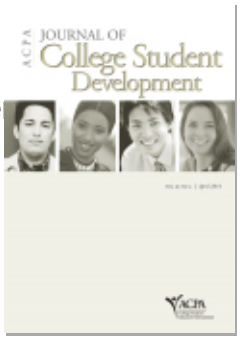
The Influences of Course Effort and Outside Activities on Grades in a College Course

Soren Svanum, Silvia M. Bigatti



Journal of College Student Development, Volume 47, Number 5, September/October 2006, pp. 564-576 (Article)

Published by The Johns Hopkins University Press
DOI: 10.1353/csd.2006.0063

The Influences of Course Effort and Outside Activities on Grades in a College Course

Soren Svanum Silvia M. Bigatti

The influences of course effort and outside (family, job, social) activities on grades earned in a college course were examined for 230 urban college students. Multiple measurements of hours of work, social and family activities, and course effort were collected over a semester. Path modeling revealed that cumulative GPA and course effort had significant and independent predictive paths with grades. Outside activities did not directly influence course grade. Job activities, however, negatively influenced course grade indirectly through reduced course effort and mediated the influence GPA exerted on course grade. Thus, work demands lessened course effort and lessened GPA-indexed potential for course success. Cumulative GPA positively influenced effort, and effort mediated part of the relation between cumulative GPA and grades.

Research that attempts to understand college success has increasingly emphasized a dynamic, active process and the relations among many different behaviors that influence outcomes. Furthermore these outcomes occur within and are in some degree influenced by an environmental context that includes extra-curricular demands of work, family, and socializing. Success in college must be in some significant degree a joint product of these reciprocal influences that likely vary over a semester and over a college career.

Although the college experience produces a tapestry of individual changes not just confined to course learning, course grades and grade point averages (GPAs) represent one important thread that has received considerable attention as a measure of academic learning, one significant element of school success. Understanding factors that influence grade-measured success has generated considerable empirical interest over the past few decades (Pascarella & Terenzini, 2005). Pascarella and Terenzini support the attention given to grades as measures of success, as "grade-point averages are the lingua franca of the academic instructional world, the key to students' standing and continued enrollment . . . and to employment opportunities" after graduation (p. 396). The present study focuses upon grade-measured success, and we attempted to explain variation in grades by examining student behaviors in course effort in conjunction with the impact of outside activities.

Course Effort

Intuitively an important component of course success is effort. Effort is defined by such activities as lecture attendance, assignment reading, and studying. On college campuses, as well as in other areas of performance, it is a deeply held belief that persistent effort and hard work will pay off and lead to higher grades and better learning. Contemporary models of student learning emphasize student engagement and effort as important variables in course success (e.g., Astin, 1993). Students in turn view course effort as an important component of course performance, and when students receive lower course grades than expected, they often attribute this to a failure

Soren Svanum is Associate Professor and Silvia M. Bigatti is Assistant Professor, both in the Department of Psychology at Indiana University–Purdue University Indianapolis.

to include some measurement of effort into course grade assessments (Gaultney & Cann, 2001).

However persuasive the speculation that effort and grades are related, empirical research among university students that has examined the relation of course effort to grades has produced mixed findings. For example, Schuman and colleagues (Schuman, Walsh, Olson, & Etheridge, 1985) attempted to reveal the relation between study effort and college grades. In their initial study, 424 undergraduates were interviewed at midterm, providing information concerning hours studied and lecture attendance. Indices that summarized study effort were weakly associated with semester GPA, accounting for but a very small amount of semester GPA variation. Their subsequent studies employed methodological modifications designed to more powerfully test the hypothesis that study effort and grades were related. In study two, the relation between study effort and grades was assessed within a single class. The third study employed time diaries of study activity during one point in the semester, and in a final study, study effort was assessed several times over the semester, and semester GPA served as the criterion variable. In sum, four separate studies including 875 students were conducted, each employing somewhat different measures and approaches to the research question. Results were consistent in that they revealed very little if any relation between study effort and grades. Reports of class attendance, however, were significant predictors of grades. Similarly, Plant, Ericsson, Hill and Asberg (2005) found modest relations between semester GPA and attendance and semester GPA and study environment (quiet with no distractions versus not) but no relation between study time and semester GPA.

When effort has been found to predict grades, the magnitude of relation between grades and effort has been unexpectedly weak and complex. In their study of effort and grades, Michaels and Miethe (1989) included measures of study habits in addition to study hours. The study habits they examined were rewriting study notes, studying without noise, "cramming" versus non-cramming, having a routine time to study, and studying in the library. They found correlations between the various measures of study effort and cumulative GPA in the magnitude of $r = .03$ to .18. Their highest correlation was with study time, which predicted cumulative GPA even after statistically controlling for other study variables. However, the relations between study time and cumulative GPA were varied and unevenly observed. For example, study time was not associated with grades for those students who crammed nor for juniors or seniors. Rau and Durand (2000) also examined similar relations within a typical college sample of dorm residents in a less select institution than the Schuman et al. (1985) study (lower SAT scores, high school GPA, and college GPA). These authors included a more complex measure of effort, academic ethic, in their analysis. Academic ethic included weekly hours of study, time spent studying on weekends, time spent studying in the evenings, patterns of studying for exams, priority of study or socializing in their lives, concentration, and attitude toward academic challenges. In essence, academic ethic defined students "who see academic work as a calling from those who do not" (Rau & Durand, p. 30). These authors found a modest relation of $r = .25$ between semester GPA and academic ethic. For these authors as well, the relation between semester GPA and academic ethic was complex. Dividing academic ethic into six categories, they found similar semester GPAs (approximately 2.4) for those in the first three categories, and after a sudden jump, similarly higher semester GPA (approximately 2.8) for those in the last

three categories.

Outside Activities

The relation of the demands of outside activities, such as employment and social and family responsibilities, to college performance has received considerable scholarly interest but little prospective empirical research. This interest has been encouraged by the growth of the percentage of undergraduate students who work while attending college (National Center for Educational Statistics, 1997), and the growth of this "new majority" set of students who by definition are older, more likely employed, and more likely to have significant family obligations in comparison to students on more traditional, residential campuses. Bean and Metzner (1985) have proposed a conceptual model of non-traditional student attrition, and within their model, students' grades were assumed to be indirectly influenced by these outside activities through their impact on study behaviors and course attendance. However, attempts to demonstrate that outside activities influence grades have been sparse and contradictory as well. This is unfortunate given the changing demographics of the student population.

Employment. Rau and Durand (2000) found no relation between job hours and semester GPA; in contrast, Plant and colleagues (2005) found that working was associated with lower semester GPA. In their review of a decade of research in the area, Pascarella and Terenzini (2005) found that more hours of work were associated with more complaints from students regarding their ability to perform well in their coursework. Thus, students clearly believe that the demands of work influence academic performance, but strong and direct evidence of such an effect is lacking.

Social Activities. One problem with measuring how social activities and performance in college are related is that college students engage in a wide variety of social activities. Pascarella and Terenzini (2005) reviewed a large body of research that demonstrated that social interactions with peers may enhance the learning and performance of college students when these interactions are related to the academic environment. Typical activities in this category are those that involve intellectual discussions on a variety of subjects such as politics, religion, science, etc. On the other hand, several well-designed studies using objective measures of performance suggested that those who participate in student clubs, organizations, and sororities or fraternities achieve lower academic performance and learning. Students who joined these groups did more poorly on objectively measured learning than those who remained independent (Pascarella & Terenzini, 1998), but whether this is because of selection or a consequence of the social milieu or the quantity of outside social activities of some students is unclear. Thus, in various ways outside social activities do appear to influence or index academic performance but the ways in which this occurs is unclear. In the present study, we examined social activities in the broadest sense, in terms of hours of time students devoted to these activities, and then assessed this in relation to other outside activities, course effort, and course grades.

Family Responsibilities. Family responsibilities are often viewed by students as negatively influencing their college career. Bean and Metzner (1985) reported on the results of studies that examined family responsibilities and attrition among non-traditional students and found that students who dropped out of college frequently reported family responsibilities as a factor related to the withdrawal. Although family responsibilities may negatively influence persistence in college, they may have a different effect on grades. For

example, Li-chen (1983) studied 383 students at a state university and determined that as family responsibilities increased, so did grade performance. Specifically, subjects married with children had higher GPAs than those married without children, who had higher GPAs than those not married and without children. These findings may contradict student reports of the negative influence family responsibilities have on school performance or may simply index older and more mature students who are more motivated or more skilled (Trueman & Hartley, 1996) than their younger, non-married counterparts. In the present study we were interested in a more direct test of the extent to which family responsibilities reported over a semester would relate to course success, course effort, and other outside activities.

The aims of the present study were to: (a) prospectively examine the relations between course effort and grade-measured performance in a college course; (b) examine how outside activities are related to course success; (c) determine if study effort and cumulative GPA contribute independently to the prediction of course grade and if effort has different benefits depending upon cumulative GPA; and (d) test a conceptual model that posits that family, job, and social activities influence course success through effort, independent of cumulative GPA.

METHOD

Participants

Initially, 195 females and 63 males enrolled in three sections of a one-semester course taught by the same instructor during an academic year. However, 26 students withdrew, and 2 were assigned an incomplete. Of the 26 who withdrew, 12 did so without attempting any exams, and most others withdrew after their second exam. Their collective performance at the time of withdrawal was 59%, or a grade of "D." We compared these students on the measures obtained from school records, as not all students who withdrew completed study questionnaires. These students did not differ from their counterparts who stayed in the course in demographic characteristics or year in school. They did have a slightly lower cumulative GPA (2.5 vs. 2.7), $t(254) = 2.15$, $p < .05$, than their counterparts who completed the course. All subsequent analyses were conducted on the 172 female and 58 male students who completed the course. Missing data were encountered with eight participants on some measures (e.g., one student did not have a cumulative GPA), and in other instances single item responses were missing. Hence, the sample size ranged from 210 to 230, depending upon the analyses.

All but 2 of the 230 students were undergraduates; the large majority (85%) had already completed a year or more of college. Most (84.3%) were Caucasian, 12.6% identified as African-American, 1.3% as Asian, and 1.7% as Latino. The mean age was 24.8 ($SD = 7.4$). In terms of credit hours, most (87%) were registered for 9 or more semester hours, with an average semester load of 12.1 hours ($SD = 3.5$). About one third of the students had majors in the schools of Liberal Arts and Science, 25% had not yet identified their undergraduate major, and the remaining students were spread across many undergraduate schools including Education, Nursing, Social Work, and General Studies. For most students, this course likely represented an elective in behavioral science needed for an undergraduate degree.

Procedures

Students enrolled in an upper division psychology course in a large Midwestern urban university served as study participants. This course is academically demanding and attracts

TABLE 1.

Means, Standard Deviations, and Correlations Among Study Variables

Variables	Cumulative GPA	Course Effort[a]	Family Activities	Social Activities	Job Activities	Course Grade
Course Effort[a]	.37**					
Family Activities	.04	.01				
Social Activities	–.05	–.07	–.14*			
Job Activities	–.17*	–.30**	–.02	–.14*		
Course Grade	.54**	.48**	.10	–.12	–.22**	
Mean	2.70	0.00	15.10	8.70	24.00	2.40
Standard Deviation	0.58	0.64	16.00	8.20	14.40	1.30
n	228	223	222	222	223	230

[a] Scores for course effort were computed from single items that assessed the degree of completed textbook readings, the extent of textbook review, study guide use, attendance at lecture and review session, and hours studied for the exam. These responses were coded numerically, converted to *z* scores, and averaged over the semester.

*$p < .05$. **$p < .01$.

students from many majors, thus providing heterogeneity with regard to student backgrounds, ability, and grades. Students were informed that survey responses would not in any way influence their grade and would not be available to the instructor during the semester. Course examinations were completed at a designated university computer laboratory. Following completion of the examination, and prior to any performance feedback, students completed computer-administered survey items.

Measures

We obtained information on cumulative GPA at the beginning of the semester, year in school, and demographics from university records.

Course Grade. The primary dependent variables were final course grades determined by performance on four of five exams over the semester and course effort. We scaled course grades in 12 units from A = 4.0, A– = 3.7, B+ = 3.3, to D– = .7, F = 0. Some students who did not complete required exams and did not formally withdraw from the course earned "F" grades.

Course Effort. We developed two measures of effort, study effort and course attendance, which combined to produce an overall course effort variable. We measured study effort following the completion of each exam with four single items that assessed the degree of completed textbook readings, the extent of textbook review, study guide use, and hours studied for the exam. Textbook items used a scale ranging from 0 = *none* to 4 = *all of the assigned material*. Similarly, study guide use ranged from 0 = *none* to 4 = *extensive use*. Students reported an estimate of the total number of hours of test preparation. Post-examination survey item responses were converted into *z* scores, and the overall measure of study effort ($\alpha = .80$) was obtained by combining items that measure the extent of reading of assigned material, extent of review of textbook, study hours, and study guide use.

Lecture attendance measured the number of lectures missed, review session attendance was a dichotomous yes or no. Lecture attendance and attendance at review sessions were also converted into standardized scores and similarly combined to summarize course attendance.

Outside Activities. As indices of outside activities, students also reported, following the completion of each exam, the number of hours during the previous week that they worked at a paid job, engaged in social activities, and spent in family responsibilities. Averaged hours of work, family responsibilities, and social activity each served as indices of these outside activities over the semester (see Table 1).

Statistical Analysis

The regression/correlation analyses detailed by Cohen, Cohen, West, and Aiken (2003) were employed, and statistical analyses were performed using SPSS 11.0. Equation modeling was facilitated by the computer program AMOS 4.0 (Arbuckle, 1999).

RESULTS

Reports of Activity over the Semester

Course grade was based upon the three highest test scores out of the first four examinations plus the fifth. Consequently, reports of study effort and outside activities following each exam were averaged after removal of the survey results corresponding to their lowest test score out of the first four. Analyses conducted based on all five exams when available resulted in essentially unchanged findings.

Students reported reading about 75% of course assignments and reported 8.6 hours of study for each examination (*SD* = 4.6). Lecture attendance averaged about 60%. Twenty-one students (9%) reported that they were not employed over the entire semester. Those who did work averaged 26.5 hours of work per week (*SD* = 12.8). Family responsibilities accounted for 15.1 hours (*SD* = 16.0) and social activities another 8.7 (*SD* = 12.8).

Aims 1 and 2: Relations Among Course Performance, Effort, and Outside Activities Measured over the Semester. At the end of the semester, students were assigned grades based upon predetermined point totals. Grades ranged from "A" to "F" and were converted into standard values on a four-point scale. The course GPA was 2.37, and 21% of the students earned an "A" grade, 33% a "B," 21% a "C," and 25% earned "D" or "F."

Total course effort was moderately related to course grade, $r(223) = .48$, $p < .01$; 95%CI: $r = .37$ to $.57$, as were its components, study effort, $r(223) = .44$, $p < .01$; 95%CI: $r = .33$ to $.54$, and course attendance reported over the semester, $r(223) = .34$, $p < .01$; 95%CI: $r = .22$ to $.45$. Reports of social activities in hours, $r(223) = -.12$, p .05; 95%CI: $r = -.25$ to $.01$, and family hours of responsibility, $r(233) = .10$, p .05; 95%CI: $r = -.03$ to $.23$, were unrelated to final course grade. Reports averaged over the semester of hours of work activity were reliably associated with final grade, $r(223) = -.22$, $p < .01$; 95%CI: $r = -.34$ to $-.09$, indicating that increasing hours of job activity was associated with lessened course success as measured by final grade. See Table 1 for correlations among variables.

Aim 3: Relations of Study Effort and Cumulative GPA to Course Grade. Study effort and cumulative GPA were reliably associated, $r(221) = .33$, $p < .01$; 95%CI: $r = .21$ to $.44$, indicating that more successful students (higher GPAs) were those who tended to study most. Cumulative GPA was also related to course performance, $r(228) = .54$, $p < .01$; 95%CI: $r = .44$ to $.63$. Multiple regressions were then used to determine if each contributed independently to course grade and if study effort had different benefits depending

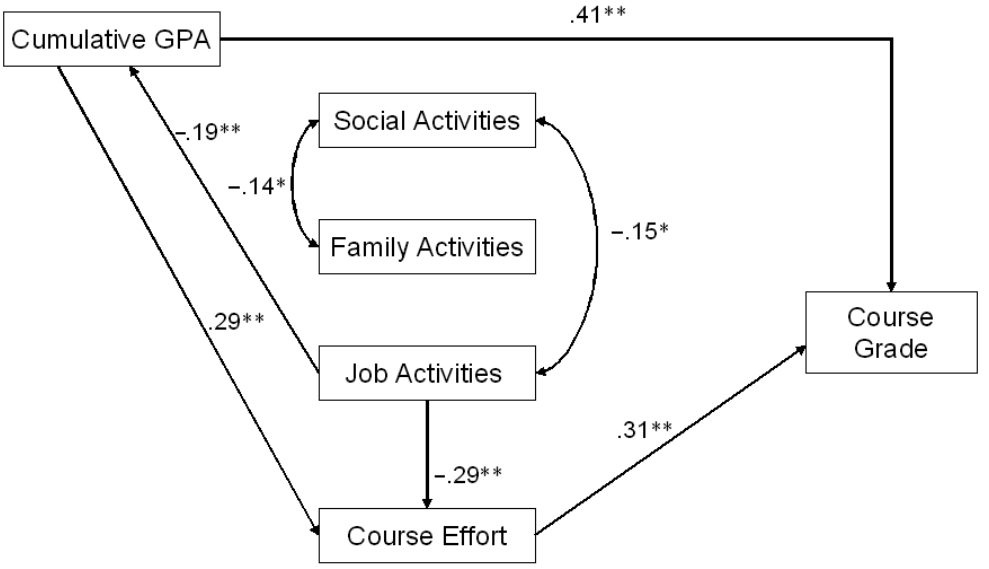


FIGURE 1. Path Model Predicting Course Grade from Cumulative GPA, Outside Activities, and Course Effort

Two-headed arrows are correlations, and one-headed arrows are standardized path coefficients. All paths are statistically significant (*$p < .05$; **$p < .01$).

upon GPA. Study effort and cumulative GPA were entered first followed by an interaction term. Both study effort and cumulative GPA independently predicted course grade, and the two variables together accounted for 37% of grade variation, $R = .61$; $F(2, 218) = 131.5$, $p < .01$. Additionally, a significant interaction, $F(1, 217) = 4.7$, $p < .05$, indicated that students who had lower GPAs benefited most from increased study effort in comparison to those with higher cumulative GPAs.

Aim 4: Modeling of Course Effort, Outside Activities, and Cumulative GPA. The primary focus of this study was to assess the relation of course effort (study effort and attendance) to grades and to examine how course effort, outside activities, and cumulative GPA jointly influence course success. Accordingly, we proposed a model that included cumulative GPA as an index of both ability and degree of past school success. We speculated that cumulative GPA would influence grades independent of effort and other factors because GPA contains a component of learning ability. The composite indices of study effort and course attendance served as an index of course effort, and averaged reported hours of job activity, family responsibilities, and social activity served as observed estimates of outside activities. We assumed that these outside activities may influence grades directly, or more plausibly, influence grades through course effort. Thus, we speculated that the pressures of work, family, and social activities diminish course effort and may negatively influence grades through effort. Even though GPA was measured before outside activities, we hypothesized that the level of current outside activities would be associated with cumulative GPA, reflecting a cumulative effect that outside activities are assumed to have on grades. Our speculation was based on a supposition that work, family responsibilities, and possibly social activities are rather constant

over time. For example, high family responsibility would negatively influence grades during a given semester but also have a cumulative effect over time on GPA to the extent that family demands are relatively stable over longer periods of time.

The proposed path model was fitted on 213 study participants using maximum likelihood estimation. Paths that were non-significant were trimmed, and a revised model was re-tested and is presented in Figure 1 along with the obtained standardized regression coefficients. The chi-square goodness-of-fit measure was non significant, $\chi^2(8) = 13.7$, $p = .09$, indicating a reasonable model fit. The root mean square error of approximation (RMSEA), a widely recommended goodness-of-fit measure (MacCallum & Austin, 2000) was .06 (95%CI: .00 to .11), indicating that the model fit the observed data with a reasonable although not excellent degree of precision (Browne & Cudeck, 1993). The Bollen GFI (Bollen, 1990), another widely used index, was .98, again providing evidence of a good fit. Taken together, these results suggest that the model fit the data reasonably well, was plausible from a statistical standpoint, and that interpretation of the model paths would be reasonable.

Overall, 36% of course grade variation was accounted for by the model. Cumulative GPA played a central predictive role and accounted for approximately 50% of the total explained variation, the largest portion of which was the direct effect of cumulative GPA on course grades. As anticipated, course effort was also positively associated with course grade and had a direct effect on grade that was slightly less than the direct effect for cumulative GPA. Family, job, and social activities were not found to directly influence course grade. Table 2 provides an overview of the direct and indirect effects of GPA, effort, and job activities on course grade and on effort.

Family and job activities were negatively associated with social activity, indicating that reports of social activity decreased as job and family responsibilities increased. Of the three outside activities measured, only job activity reliably influenced course effort indicating that reports of effort decreased as job activities increased. In addition, cumulative GPA was reliably associated with effort, indicating that students who had been more successful by GPA standards tended to invest more effort in the course activities.

TABLE 2.

Standardized Direct and Indirect Effects of GPA, Job Activities, and Course Effort on Course Grade and Course Effort

Effect	Direct	Indirect	Total
On Course Effort			
of GPA	.295	.000	.295
of Job Activities	–.289	–.056	–.345
On Course Grade			
of Job Activities	.000	–.185	–.185
of GPA	.411	.091	.502
of Course Effort	.312	.000	.312

Thus, course effort was influenced by GPA and job activities, and each represented the potential to indirectly influence course grade. To test these indirect effects, the unstandardized coefficients of these indirect paths were calculated as a product of the direct paths, and the estimated standard error was computed following the sample formula presented by Goodman (1960). As a statistical test, critical ratios (*CR*) were calculated, and obtained values equal to or greater than 1.96 were considered statistically reliable. The indirect path of job activities → effort → course grade was significant ($B = -.11$, $CR = -3.5$) as was the indirect path of cumulative GPA → effort → course grade ($B = .20$, $CR = 3.6$). In each instance, then, job activities and GPA influenced course grade by an effect mediated through effort. The indirect path of job activities → GPA → course grade was also significant ($B = -.10$, $CR = -2.7$) indicating that as students worked more hours, they were less able to realize their academic potential as expressed in their GPA.

DISCUSSION

The purpose of this study was to prospectively examine the relations among course effort, outside activities, and success in a college course. Course effort was conceptualized as study effort (reading of assigned material and review of textbook, study hours, and study guide use) and attendance (at both lecture and review sessions). Success was measured by the final grade attained in the course. These relations were examined through correlation analysis, regression, and through testing a theoretical model of the proposed relationships between these variables.

One aim was to prospectively examine the relations between course effort and success, as in previous research these relations have been either non-existent (Plant et al., 2005; Shuman et al., 1985) or very modest (Michaels & Miethe, 1989; Rau & Durand, 2000). These previous findings are certainly counterintuitive and inconsistent with the widely held belief that hard work and effort pay off, particularly in tasks that require skill and knowledge acquisition. Such a pattern of findings, moreover, would question the utility of efforts designed to increase course commitment, student motivation, and effort that are widely employed in universities today. In the present study, however, the magnitude of this relation was more substantial ($r = .34$ to .48), suggesting that course success and course effort defined in various ways are appreciably related. Student effort does determine course success to an appreciable degree, then, and university programs directed toward developing and encouraging systematic study, effort, and course commitment will likely result in tangible student gains.

The weak and mixed findings of previous studies may be related to study design and the measurement of effort. Typically, researchers ask students about their study habits at one point in the semester and then relate this measure to cumulative or semester GPA. In the present study, students were queried at various points in one semester and specifically asked about their efforts for each exam in the same course; the grade obtained for that specific course was examined as the outcome variable. Research that measures effort at a single point may not capture the changing character of effort over a semester. In this study, the correlation obtained between each sampling of study effort and the corresponding test score was always higher than the correlation of study effort measured for any one exam and the final course grade. As well, multiple measurements provide for more reliable estimates of measured behaviors (Epstein, 1979) and allow for a strong test of the hypothesis that effort and outside activities are asso-

ciated with grade-measured performance.

Moreover, in the present study grades for a single course were used and such a procedure would reduce if not remove grade variability that is observed between courses and institutions, uneven tendencies for grade inflation, and variable assessment practices of instructors. That is, the within course analyses used in the present study have an expected advantage because the heterogeneous nature of semester GPA tends to mask relations that can be more clearly observed in performance within a single class (Goldman & Slaughter, 1976). Hence, use of grades as a dependent variable in this study should provide a reliable snapshot of learning not confounded by these sources of measurement error.

We also sought to determine if effort had different benefits depending upon cumulative GPA. We suspected that more successful students, i.e., those with higher cumulative GPAs, should profit more from a given amount of effort than less successful students, i.e., those with lower cumulative GPAs. Instead, findings showed that although more successful students exerted more course effort, less successful students received more benefit from effort in terms of final grade than their more accomplished counterparts. These results support the commonly held belief that persistent effort and hard work do pay off and lead to higher grades and better learning. Rau and Durand (2000) speculated that course effort would be a less salient predictor of grades at highly select institutions and suspected that the Schuman et al. (1985) generally null findings were related to this factor. The results from the present study are consistent with this reasoning.

Our test of the theoretical model provides an interesting portrayal of how course performance is jointly influenced by course effort, outside activities, and previous success captured by cumulative GPA. First, as mentioned above, previously successful students demonstrated more course effort over the semester, and in the model course effort influenced final grade independent of other variables.

Cumulative GPA influenced course grade directly, as expected, given that we conceptualized it as a measure of learning ability in addition to measuring past success. These findings are not surprising and are quite consistent with findings from other studies (Plant et al., 2005). Moreover, a portion of the predictive influence of cumulative GPA was mediated through effort as well, suggesting that one of the student attributes attached to cumulative GPA is related to students' ability to regulate course effort. Thus, meta-cognitive and motivational models of college success (e.g., Pintrich & De Groot, 1990) that depict effort regulation as an important component for success find support in these data.

Another aim, which can best be described within the theoretical model, was to examine how outside activities are related to course success. The model suggested that more job activities were associated with lower course effort and lower cumulative GPA. The significant negative path between current semester job hours and cumulative GPA may reflect the cumulative effect of employment on grades if one assumes that those who work many hours this semester have done so previously. These combined findings suggested that less successful students, i.e., those with lower GPAs, are also those who have more job activities that appear to limit course effort. Because "average" students benefit most from course effort, the job activities of more average students may be especially detrimental to their education. That is, higher levels of outside employment may have a cumulative negative effect on grades over a college career and may be most deleterious to more average students. Job activities also indirectly influenced course grade through cumulative GPA in a manner that suggests that

high hours of work lessen the students' success at fulfilling their academic potential as predicted by their cumulative GPA.

Also, because job activities were not measured over the period of time during which the cumulative GPA was earned, these interpretations are speculative. Prospectively measuring employment activities and college accomplishment over time would provide a more suitable estimate of the cumulative impact of employment on grades. Furthermore, the causal direction may be that less college-motivated or talented students are more likely to engage in outside employment, and the observed effects reflect an interaction between student characteristics and discretionary effort. A more complete understanding of these relations should be useful to college counselors and those who provide financial aid and advice about how to balance financial need, employment, and college success. Although the exact causal links are speculative, the data from the present study do offer evidence that extent of student employment can significantly impact college grades.

Unexpectedly, family activities were not associated with course effort or with final grade. This result is in contrast to student reports that family responsibilities are often associated with academic difficulties (Bean & Metzner, 1985). Research that focuses upon a more detailed assessment of family responsibilities may uncover relations not captured by these data. It is also possible that student self-reports inform us more about their implicit theories of college success and failure than they do about the causal paths observed objectively.

Finally, social activities appeared fungible, and as family and work demands increased, reported social activities diminished. One can assume that students purposefully adjusted activities to meet overall demands and goals, and social activities were more discretionary than the others.

The institution where the present study was conducted is an urban campus, with 14% minority students, 59% female, 42% over age 25, 42% part-time, 92% in-state students, 80% employed full or part time, and 44% taking longer than 6 years to earn their bachelor's degree. Although students meeting these characteristics are considered non-traditional, in fact these demographics reflect more and more the typical American college student (Eckel & King, n.d.) or what the Pew Foundation calls "the new majority." However, these results will most likely generalize best to similar settings and may not describe the influences on grades found at more traditional institutions where employment is far less common and extensive and often more discretionary, where university social life is more prominent, and at institutions that are highly selective.

Additionally, a small number of students (10%) who enrolled in the course subsequently dropped out or withdrew, and results are based upon those who completed the course. The observed frequency of withdrawal in this study is similar to the frequency of student withdrawals across the university. We can only speculate as to how they may differ from completers and how their data may have changed the findings of the present study; however, excluding these students may limit the generalizability of the findings.

It is important to note that indices of quantity, such as proportion of lectures attended and hours of study, were employed in this study. Although these indices provided robust associations with final grade in this study, they do only coarsely index underlying processes of likely greater predictive and theoretical importance. For example, lecture attendance per se is relatively less important in terms of learning than attentive listening, effective note taking, etc. Careful and multiple

measures of the quality of course effort will likely produce more powerful models that attempt to explain course success. Nonetheless, employing a linear equation, cumulative GPA, study effort, lecture attendance, and expected grade as measured in this study accounted for 36% of final grade variation. Similarly, the course measurement of outside activities may not capture important elements that do in fact influence academic performance. For example, type of family responsibility (e.g., child care) or social activities (e.g., activities involving alcohol consumption) may moderate the impact outside activities have on grades. Svanum and Zody (2001), for example, have demonstrated that unmanageable alcohol use does negatively influence course grades in college. More refined measures of outside activity may reveal effects not observed in this study. Further, the central role effort plays in course success found in this study is based upon correlation data that cannot establish directional causality. Future research should explore this question with experimental designs that alter the course environment in ways hypothesized to increase student engagement and effort, and prospectively assess changes in student effort and the expected outcome on learning.

The variables found to influence grades in this study are largely malleable and in some degree discretionary. Thus, the findings of the present study are encouraging, as they support the notion that hard work in academics leads to success. Even cumulative GPA, the strongest predictor, is a value that students can influence over time. The findings also suggest other avenues through which one can accomplish better grades, such as reducing work hours. For those who cannot afford to work fewer hours, acquiring time management skills and strategies designed to lessen the influence of work demands upon effort may result in better outcomes. Our findings fit well with the research on programmatic interventions. These are programs, such as learning communities, first year seminars, and remedial programs, that universities have adopted in an effort to increase retention of undergraduate students. Typical components of these programs include, among others, time management skills, help in identifying sources of financial aid, and much emphasis on study habits that lead to success. The body of evidence suggests that these programs have a positive impact on student retention and success in college (Pascarella & Terenzini, 2005). However, to date, most colleges do not require students to take these courses or participate in these programs, in spite of their proven success, possibly because of the high cost of implementing them (Pascarella & Terenzini, 2005).

Thus, results such as these can help universities work with students to become more purposeful and effective learners and more appreciative of how both effort and outside activities might affect school success, and in this way provide hope for students struggling to succeed or those ambitious for increasing success.

Correspondence concerning this article should be addressed to Soren Svanum, Department of Psychology, 402 North Blackford, Indianapolis, IN 46202; SSvanum@iupui.edu

REFERENCES

Arbuckle, J. L. (1999). *Amos 4.0* [Computer software]. Chicago: Smallwaters.

Astin, A. (1993). *Assessment for excellence: The philosophy and practice of assessment and evaluation in higher education*. Phoenix, AZ: American Council on Education and the Oryx Press.

Bean, J. P., & Metzner, B. S. (1985). A conceptual model of nontraditional undergraduate student attrition. *Review of Educational Research*, *55*, 485-508, 520-528, 530.

Bollen, K. A, (1990*). Structural equations with latent variables*. New York: Wiley.

Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.), *Testing structural equation models* (pp. 136-162). Newbury Park, CA: Sage.

Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences* (3rd ed.). Mahwah, NJ: Erlbaum.

Eckel, P. D., & King, J. E. (n.d.). An overview of higher education in the United States: Diversity, access, and the role of the marketplace. Washington, DC: American Council on Education. Retrieved June 23, 2005 from *http://www.acenet.edu/bookstore/pdf/2004_higher_ed_overview.pdf*

Epstein, S. (1979). The stability of behavior: I. On predicting most of the people much of the time. *Journal of Personality and Social Psychology*, *37*, 1097-1126.

Gaultney, J. F., & Cann, A. (2001). Grade expectations. *Teaching of Psychology*, *28*, 84-87.

Goldman, R. D., & Slaughter, R. E. (1976). Why college grade point average is difficult to predict. *Journal of Educational Psychology*, *68*, 9-14.

Goodman, L. A. (1960). On the exact variance of products. *Journal of the American Statistical Association*, *55*, 708-713.

Li-chen, M. (1983). Family ties as related to academic performance of college students. *College Student Journal, 17*(3), 308-316.

MacCallum, R. C., & Austin, J. T. (2000). Applications of structural equation modeling in psychological research. *Annual Review of Psychology*, *51*, 201-226.

Michaels, J. W., & Miethe, T. D. (1989). Academic effort and college grades. *Social Forces*, *68*, 309-319.

National Center for Educational Statistics. (1997). *The condition of education 1997*. (GPO Publication No. 065-000-00997-8). Washington, DC: U.S. Government Printing Office.

Pascarella, T., & Terenzini, P. (1998). Studying college students in the 21st century: Meeting new challenges. *Review of Higher Education, 21*, 151-165.

Pascarella, E.T., & Terenzini, P.T. (2005). *How college affects students* (2nd ed.). San Francisco, CA: Jossey-Bass.

Pintrich, P. R. & De Groot, E. V. (1990). Motivational and self-regulated components of classroom academic performance. *Journal of Educational Psychology, 82*(1), 33-40.

Plant, E. A., Ericsson, K. A., Hill, L., & Asberg, K. (2005). Why study time does not predict grade point average across college students: Implications of deliberate practice for academic performance. *Contemporary Educational Psychology, 30*, 96-116.

Rau, W., & Durand, A. (2000). The academic ethic and college grades: Does hard work help students to "make the grade"? *Sociology of Education*, *73*, 19-38.

Schuman, H., Walsh, E., Olson, C., & Etheridge, B. (1985). Effort and reward: The assumption that college grades are affected by quantity of study. *Social Forces*, *63*, 945-966.

Svanum, S., & Zody, Z. (2001). Psychopathology and college grades. *Journal of Counseling Psychology*, *48*, 72-76.

Trueman, M. & Hartley, J. (1996). A comparison between the time-management skills and academic performance of mature and traditional-entry university students. *Higher Education, 32*(2); 199-215.